CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER No. 88-176

NPDES PERMIT NO. CA0037621

REISSUING WASTE DISCHARGE REQUIREMENTS FOR:

CITY OF SUNNYVALE
SUNNYVALE WATER POLLUTION CONTROL PLANT
SUNNYVALE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. The City of Sunnyvale (hereinafter discharger) submitted an NPDES permit application dated December 15, 1986, for reissuance and amendment of waste discharge requirements under the National Pollutant Discharge Elimination System, NPDES Permit No. CA0037621.

2. The discharger is currently subject to NPDES permit CA0037621, (Order 82-37, adopted June 16, 1982), and Time Schedule Order 85-123.

3. The discharger currently discharges average dry weather flow of approximately 17 million gallons per day (mgd) from its advanced waste treatment facility at 1444 Borregas Avenue, Sunnyvale. Treatment facilities consist of grit removal, primary sedimentation, secondary oxidation ponds, nitrification, dissolved air flotation, dual media filtration, and chlorination/dechlorination. Sludges are anaerobically digested and dewatered in sludge lagoons. The current permitted average dry weather flow capacity is 29.5 mgd. This facility treats domestic and approximately fortyfive percent industrial wastewater from the areas of Sunnyvale, Rancho Rinconada, and Moffet Field

   Treated wastewater effluent is discharged from the treatment plant into Sunnyvale West Channel,(37deg 26min latitude - 122deg 02min longitude) via Guadalupe Slough, to the waters of South San Francisco Bay and its tributaries, all waters of the United States.

4. The Board amended its Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on December 17, 1986, and the State Water Resources Control Board approved it on May 21, 1987. The provisions of this permit are consistent with the revised Basin Plan.

5. The beneficial uses of South San Francisco Bay, and contiguous water bodies are:

   - Water Contact Recreation
   - Non-Contact Water Recreation
   - Wildlife Habitat

- Preservation of Rare and Endangered Species
- Estuarine Habitat
- Fish Migration
- Fish Spawning
- Industrial Service and Process Supply
- Shellfish Harvesting
- Navigation
- Commercial and Sport Fishing

6. The existing discharge location is contrary to Basin Plan policy. Discharges receiving less than 10:1 minimum initial dilution, discharges to dead-end sloughs, and discharges south of the Dumbarton Bridge are prohibited by the Basin Plan.

7. The existing discharge location is contrary to the State Water Resources Control Board Bays and Estuaries Policy. Discharge south of the Dumbarton Bridge is prohibited by the Bays and Estuaries Policy

8. Exceptions to the three prohibitions may be considered where the discharger can demonstrate net environmental benefit and water quality enhancement, both measured as a result of the existing discharge and as compared to the discharge area in the absence of the discharge. Demonstration of advanced treatment facility reliability is also necessary to to grant an exception request. Exceptions can also be granted according to two alternate criteria.

9. The objectives of the prohibitions are: to provide an added degree of protection from the continuous effects of waste discharge, to provide a buffer against abnormal discharges or plant upsets, to minimize public contact with undiluted wastes, and to reduce the visual impact of waste discharge.

10. The discharger submitted a petition, dated August 31, 1987, requesting that Discharge Prohibition A.1, and Receiving Water Prohibitions C.2.a and C.2.c be removed from their NPDES permit, CA0037621. The discharger is a member of the joint powers agency, South Bay Dischargers Authority (SBDA). The SBDA performed a Five-Year Water Quality Monitoring Study designed to assess the water quality impacts of existing discharges on South San Francisco Bay, and evaluate the existence of net environmental benefit and water quality enhancement. The discharger submitted the Five-Year Water Quality Monitoring Program Final Report and a Facility Reliability Report, as documentation of net environmental benefit and water quality enhancement, to be considered in evaluation of their exception request.

11. The requirement for demonstration of treatment facility reliability has been satisfied. The discharger will continue to operate the treatment facility so that current permit limitations are met in the future.

12. The discharger has offered to continue an Avian Botulism Program to monitor Guadalupe Slough, Moffett Channel, and the oxidation pond area for the presence of avian botulism and to control outbreaks by the prompt collection of sick and dead vertebrates.

13. The exception request and Five-Year Water Quality Monitoring Program Final Report supports a finding of net environmental benefit and water quality enhancement. The discharge enhances dissolved oxygen levels and improves flushing in the South Bay. It enhances several beneficial uses: non-contact

recreation, estuarine habitat, and commercial and sport fishing. Other beneficial uses are relatively unchanged by the discharge. Effects of the discharge on South Bay heavy metals and toxicity are unresolved but will be addressed by mandated studies and subsequent permit requirements.

14. The amended Basin Plan does not establish water quality objectives and effluent limitations for heavy metals in South San Francisco Bay. The discharger is obligated to perform specific heavy metals and toxicity monitoring studies, and assist in the gathering of data needed for the development of site-specific water quality objectives and effluent limitations, to comply with the requirements of the Basin Plan.

15. Interim controls on heavy metals are needed because of the absence of established water quality objectives and effluent limits and because of the limited assimilative capacity of South San Francisco Bay.

16. The State Board issued a draft Pollutant Policy Document in October 1988 as part of its Bay-Delta hearing process. After public hearing in 1989 the State Board will adopt a final Pollutant Policy Document regarding pollutant control in the Bay and Delta. This Order includes several strategies to control toxic pollutant discharges to San Francisco Bay for the maintenance and protection of beneficial uses. The Board will consider adopting additional strategies to this permit after the State Board adopts the final Pollutant Policy Document, and after the Regional Board has amended its Basin Plan appropriately.

17. The Board concludes that the discharger should receive a conditional exception to the above-cited prohibitions. Approving a conditional exception to prohibitions against discharge South of the Dumbarton Bridge, discharge to waters receiving less than 10:1 initial dilution, and discharge to dead-end sloughs is consistent with the objectives and policies of the Basin Plan and Bays and Estuaries Policy. Denial of the exception request would likely require the discharger to construct a deep water outfall to discharge North of the Dumbarton Bridge. Results of the Five-Year study do not support the construction of the outfall, based on water quality enhancement. Little, if any water quality improvement would result from the deepwater outfall alternative.

18. The discharger has implemented an approved EPA Local Pretreatment Program for source control and application of pretreatment standards.

19. The sludge storage site has the potential for discharge to surface or groundwater, and thus constitutes a threatened discharge pursuant to Section 13260 of the Water Code.

20. This order serves as an NPDES permit, reissuance of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Code. South Bay Dischargers Authority and the U.S. Environmental Protection Agency (EPA) jointly approved an EIR/EIS for construction of the deepwater outfall on December 10, 1980. The EIR/EIS recommended the no project alternative, that is, remaining at the present discharge location. It cited three significant water quality impacts for the no-project alternative: exceedances of water quality standards south of Calaveras Point during dry weather, less than 10:1 initial dilution for the three discharges, and possible toxicity in low-dilution zones. The EIR/EIS cited two mitigation measures: monitor the effects of advanced wastewater treatment on

South Bay water quality and biota, and investigate full-reclamation as an alternative way to comply with the Basin Plan. The SBDA five-year study has provided the additional monitoring proposed. Subsequent studies found full-reclamation to be infeasible, due to limited demand for reclaimed water.

21. The discharger and interested agencies and persons have been notified of the Board's intent to reissue the NPDES permit for this discharge and have been provided an opportunity to submit their written comments and appear at the public hearing.

22. The Board, at a properly-noticed public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder and the provisions of the Clean Water Act as amended and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of waste to waters of San Francisco Bay south of Dumbarton Bridge or tributaries thereto is prohibited.*

2. Discharge of waste not receiving initial dilution of at least 10 to 1 is prohibited.*

3. Discharge of waste to dead-end sloughs or confined waterways is prohibited.*

4. There shall be no bypass or overflow of untreated wastewater to waters of the State at the treatment plant or from the collection system under the control of the discharger.

5. The average dry weather flow shall not exceed 29.5 mgd, determined during any five-weekday period during the months of June through October.

* The discharger is granted conditional exception to discharge prohibitions 1 through 3, provided that the discharger complies with Provisions E.3 through E.6.

B. Effluent Limitations:

1. The discharge of an effluent containing constituents in excess of the following limits is prohibited:

Constituent	Unit	Monthly Average	Daily Maximum	Instantaneous Maximum
a. CBOD	mg/L	10	20	-
b. Ammonia-N:				
Jun-Sept	mg/L	2	5	-
Oct-May	mg/L	5	10	-
c. Suspended Solids	mg/L	20	30	-
d. Oil & Grease	mg/L	5	10	-
e Settleable Matter	mL/L-hr	0.1	-	0.2
f. Turbidity	NTU	-	-	10
g. Chlorine Residual	mg/L	-	-	0.0

2. The discharge shall not have pH of less than 6.5 nor greater than 8.5

3. Test organisms specified by the Executive Officer in 96-hour flow-through bioassays of the effluent shall achieve a median of 90% survival for three consecutive samples and a 90th percentile value of not less than 70% survival based on the ten most recent consecutive samples.

4. Interim Limits for Toxic Pollutants

   a. Prior to permit expiration, the effluent shall not exceed the following interim limits:

Constituent	Unit	Monthly Average	Daily Maximum
Arsenic	µg/L	10	20
Cadmium	µg/L	20	30
Chromium(VI)	µg/L	10	20
Copper	µg/L	200	300
Lead	µg/L	100	200
Mercury	µg/L	1	2
Nickel	µg/L	100	200
Silver	µg/L	20	40
Zinc	µg/L	300	500
Cyanide	µg/L	100	200
Phenolic Compounds	µg/L	500	1000
PAHs*	µg/L	-	150
Selenium**	µg/L	-	-

Notes:

* Polynuclear Aromatic Hydrocarbons
** Selenium limit to be established

   b. The Regional Board will amend this permit before December 31, 1989, to establish performance-based interim effluent limits for toxic pollutants. The Regional Board will rely on additional self-

monitoring data and will use the 95% upper confidence limit to reflect currently achievable effluent concentrations.

5. The following final effluent limits for toxic pollutants will become effective on December 21, 1991, unless the Regional Board establishes alternative limits based on site-specific studies:

Constituent	Unit	Daily Average
Arsenic	µg/L	20
Cadmium	µg/L	10
Chromium (VI)	µg/L	11
Copper	µg/L	20
Cyanide	µg/L	25
Lead	µg/L	5.6
Mercury	µg/L	1
Nickel	µg/L	7.1
Silver	µg/L	2.3
Zinc	µg/L	58
Phenols	µg/L	500
PAHs*	µg/L	15
Selenium**	µg/L	-

Notes:

* Polynuclear aromatic hydrocarbons
** Selenium limit to be established

6. Toxic Pollutant Mass Loadings

   a. The mass loading for heavy metals identified in Effluent Limitation B.4 shall not exceed 9,000 lb/year during the life of the permit (i.e. arsenic, cadmium, chromium VI, copper, lead, mercury, nickel, silver, and zinc). This limitation restricts loadings based on current performance, and is not a wasteload allocation.

   b. The Board will use the same approach to establish mass loading limits for each toxic pollutant identified in Effluent Limitation B.4 when it amends this Permit pursuant to B.4.b (i.e. limit based on 95% upper confidence limit).

   c. These interim limitations will be revised, either upward or downward, upon permit reissuance, based on a wasteload allocation for toxic pollutants. The Regional Board will develop total maximum daily loads (TMDLs) and a wasteload allocation for toxic pollutants in the South Bay.

7. The arithmetic mean of values for BOD and Suspended Solids in effluent samples collected in each monthly reporting period shall not exceed 15 percent of the arithmetic mean of respective values for influent samples collected at approximately the same times during the same monthly period (i.e. 85 percent removal).

8. At some point in the treatment process, the waste shall not exceed a median MPN for Total Coliform organisms of 23/100mL, nor a maximum of 240/100mL, as determined from the results of the previous consecutive five (5) days for which analyses have been completed.

C. Receiving Water Limitations:

1. The discharge of waste shall not cause the following conditions to exist in waters of the state at any place:

   a. Floating, suspended, or deposited macroscopic particulate matter, or foam;

   b. Bottom deposits or aquatic growths;

   c. Alteration of temperature, turbididty, or apparent color beyond present natural background levels;

   d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;

   e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the state in any place within one foot of the water surface:

   a. Dissolved Oxygen: 5.0 mg/L minimum. Median of any three consecutive months shall not be less than 80% saturation. When natural factors cause lesser concentrations than those indicated above, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.

   b. Dissolved Sulfide: 0.1 mg/L maximum.

   c. pH: Variation from natural ambient pH causing unreasonable effects on beneficial uses.

   d. Un-ionized Ammonia: 0.025 mg/L as N, Annual median.
   0.4 mg/L as N, Maximum

3. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Clean Water Act, or amendments thereto. The Board will revise and modify this Order in accordance with such more stringent standards.

D. Sludge Storage Requirements:

1. The discharge of sewage sludge shall not cause waste material to be in a position where it is, or can be carried from the sludge storage site and deposited in the waters of the state.

2. The sludge storage site shall have facilities adequate to divert surface runoff from adjacent areas, to protect boundaries of the site from erosion, and to prevent any conditions that would cause drainage from the materials in the storage site. Adequate protection is defined as protection from at least a 100-year storm and protection from the highest possible tidal stage that may occur.

3. The discharge to the sludge storage site of waste other than sewage sludge produced by the discharger facility is prohibited.

4. The storage of sludge shall not cause the degradation of groundwaters.

5. The discharger shall prepare a hydrogeologic report according to the following schedule:

Task	Deadline
Submit workplan for preparation of the hydrogeologic report	July 1, 1989
Submit hydrogeologic report	24 months after Executive Officer approves workplan

The report shall contain the information cited in Attachment 1.

6. The Regional Board may amend this permit prior to the expiration date, if changes occur in applicable state and federal sludge regulations.

E. Provisions:

1. The requirements prescribed by this Order supercede the requirements of Orders 82-37 and 85-123. Orders 82-37 and 85-123 are hereby rescinded.

2. The discharger shall demonstrate compliance with the objectives of the Prohibitions A.1, A.2, and A.3, by implementing Provisions 3 through 6:

3. Salt Marsh Conversion Assessment

The discharger shall document any new conversions of salt marsh habitat to fresh or brackish marsh habitat that occur during the life of this permit in areas that are or could possibly be influenced by the Sunnyvale discharge. The discharger shall also study habitat utilization by endangered species in these areas.

Task	Deadline
Submit a conversion and habitat utilization assessment plan acceptable to the Executive Officer	July 1, 1989
Submit the results of the plan for consideration at the next permit re-issuance	180 days prior to next permit re-issuance

4. Avian Botulism Control Program

The discharger shall monitor Guadalupe Slough, Moffett Channel and the oxidation pond areas for the presence of avian botulism, and control outbreaks through the prompt collection of sick and dead vertebrates. Beginning in 1990, the discharger will submit annual reports to Regional Board, the California Department of Fish and Game, and the U.S. Fish and Wildlife Service. Annual reports will be due on January 1 each year.

5. Development of Site-Specific Water Quality Objectives and Effluent Limitations for Heavy Metals

The discharger, alone or in collaboration with other South Bay dischargers, shall perform work, as mandated by the 1986 Basin Plan, which will result in the development of site-specific water quality objectives and effluent limits for heavy metals.

a. Evaluation of QA/QC Program

Tasks	Deadline
Submit a study proposal acceptable to the Executive Officer for evaluation of quality assurance/quality control (QA/QC) for metals not meeting Basin Plan Table 4-1 limits.	April 1, 1989
Complete any improvements in QA/QC procedures and submit a final QA/QC report.	October 1, 1989

b. Point Source Control Measures: I. Pre-treatment and Waste Minimization Programs

Tasks	Deadline
Submit a study plan acceptable to the Executive Officer to determine whether all significant controllable sources of pollutants are identified and regulated under the pretreatment program, and to identify feasible waste minimization measures that will reduce or eliminate toxics loadings to the treatment plant.	April 1, 1989

Submit a report on controllable sources of pollutants and recommend changes in the pretreatment program, where needed.	October 1, 1989
Submit a report on waste minimization that identifies reduction target sources (both industrial and domestic), feasible waste minimization technologies and measures, and the program's estimated costs to the discharger as well as to targeted sources. The discharger should investigate waste minimization measures for at least the following pollutants: copper, silver, lead, nickel, zinc, and cyanide.	December 1, 1989

c. Point Source Control Measures. II. Removal of Metals at the Wastewater Treatment Facility

Tasks	Deadline
Submit a study plan acceptable to the Executive Officer to evaluate the cost and effectiveness of removing residual metals at the wastewater treatment facility to achieve Basin Plan Table 4-1 shallow water limits.	April 1, 1989
Submit a final report on cost/effectiveness of removing residual metals.	October 1, 1989

d. Assessment of Impacts on Beneficial Uses

Tasks	Deadline
Submit a study plan acceptable to the Executive Officer for monthly monitoring of metal and selenium concentrations in water, bivalve tissues and sediments along a distance gradient from discharge outfall. The study plan shall include sediment bioassays at locations and frequencies to be determined.	May 1, 1989
Submit a study plan acceptable to the Executive Officer for monthly monitoring of metal concentrations in water column and sediments in shallow and deep water stations of the South Bay.	May 1, 1989
Commence monitoring, according to the above plans, and continue for the duration of the permit.	1 month after program approval
Propose further studies acceptable to the Executive Officer to assess impacts of heavy metals on beneficial uses.	February 1, 1990

Submit final report on beneficial use impacts.	July 1, 1991

e. Determination of Objectives/Limits Based on Cost/Impact Approach

Task	Deadline
Submit recommendation for site-specific objectives and effluent limits for selected metals based on 1) cost/effectiveness of additional point and non-point source control measures, and 2) expected impacts on beneficial uses.	August 1, 1991

f. Development of Water Quality-Based Objectives/Limits

The discharger may choose to propose site-specific water quality objectives for one or more toxic constituents, based on site-specific receiving water chemistry, in addition to the other required tasks in item E.5. If so, the discharger shall comply with the following:

Tasks	Deadline
Submit study plan for development of site-specific receiving water criteria for selected heavy metals	February 1, 1990
Complete and submit final report on studies for development of site-specific receiving water criteria for selected heavy metals	August 1, 1991

6. Ammonia Removal Study

The discharger shall conduct studies which determine the optimal removal of effluent ammonia. The study shall investigate operational and process modifications called for by the operations and maintenance manual and original design documents - to determine the optimal removal of ammonia with the available treatment processes. The discharger shall implement the ammonia removal enhancement study according to the following time schedule:

Task	Deadline
Submit a proposed study plan acceptable to the Executive Officer	March 1, 1989
Submit the results of the study for review and derivation of effluent ammonia limits	March 1, 1990

7. The discharger shall comply with all sections of this Order immediately upon adoption, except for Effluent Limitation B.5.

8. The discharger shall comply with the attached Self-Monitoring Program.

The Executive Officer may make minor amendments to it pursuant to federal regulations (40 CFR 122.63).

9. The discharger shall comply with all items in the attached "Standard Provisions, Reporting requirements, and Definitions" dated December 1986.

10. The discharger shall review and update its Operation and Maintenance Manual annually, or in the event of significant facility or process changes, shortly after such changes occur. Annual revisions, or letters stating that no such changes are needed shall be submitted to the Board by April 15 of each year, beginning 1989.

11. The discharger shall annually review and update its Contingency Plan. The discharge of pollutants in violation of this Order, where the discharger has failed to develop and/or implement a contingency plan, will be basis for considering such discharge a willful and negligent violation of this Order, pursuant to Section 13387 of the Water Code.

12. The discharger shall implement and enforce its approved pretreatment program in accordance with Board Order No. 84-60 and its amendments thereafter. The discharger's responsibilities include, but are not limited to:

    a. Enforcement of National Pretreatment Standards (e.g. prohibited discharges, Categorical Standards, local limits) in accordance with 40 CFR 403.5 and Section 307(b) and (c) of the Clean Water Act.

    b. Implementation of the pretreatment program in accordance with legal authorities, policies, procedures, and financial provisions described in the General Pretreatment Regulations (40 CFR 403) and its approved pretreatment program.

    c. Submission of annual and quarterly reports to EPA and the State as described in Board Order 84-60 and its amendments thereafter.

13. This Order expires on December 21, 1991. The discharger must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code not later than 180 days before this expiration date as application for re-issuance of waste discharge requirements.

14. This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) Permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective 10 days after the date of its adoption provided the Regional Administrator, Environmental Protection Agency, has no objection. If the Regional Administrator objects

to its issuance, the permit shall not become effective until such objection is withdrawn.

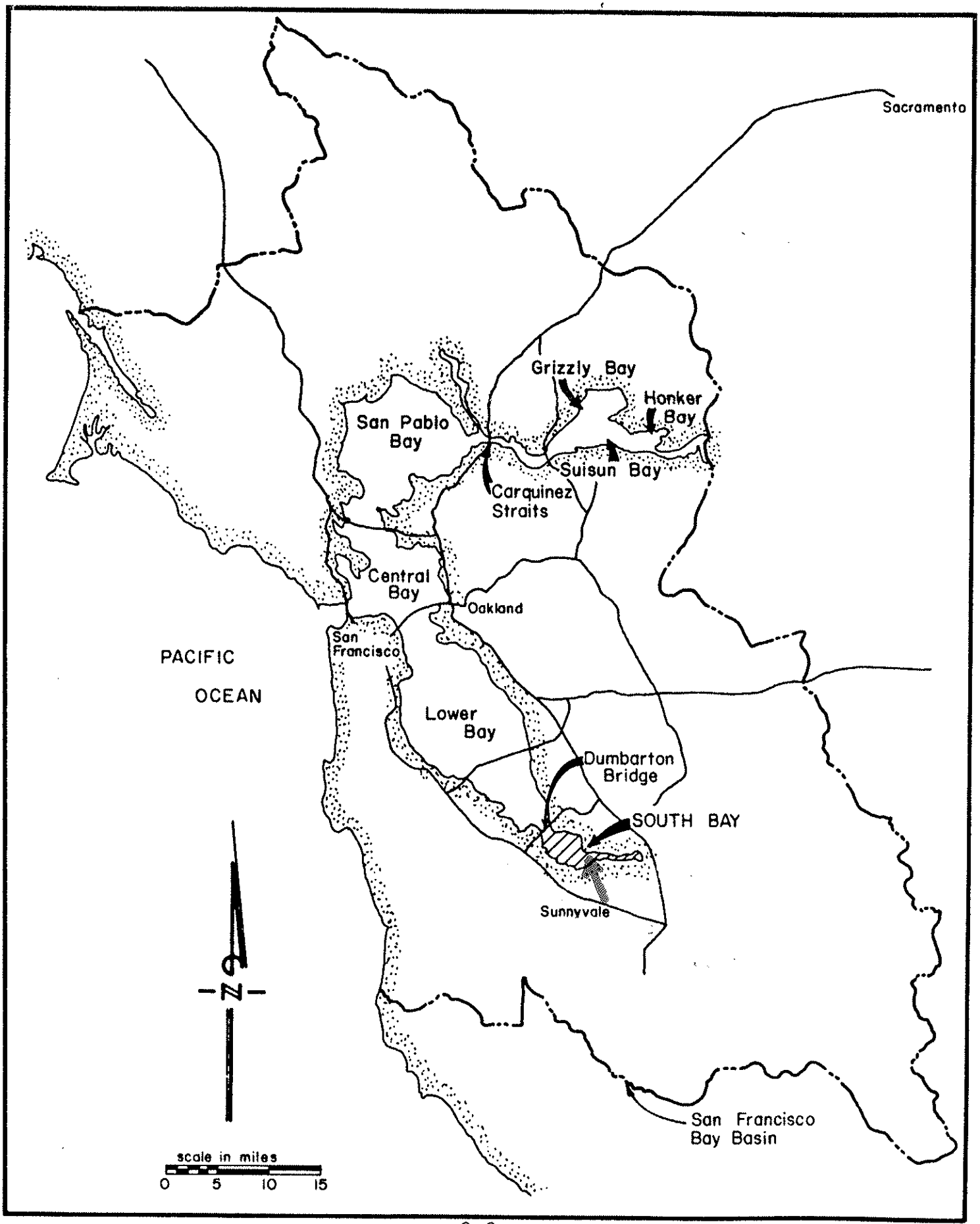
I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on December 21, 1988.

STEVEN R. RITCHIE
Executive Officer

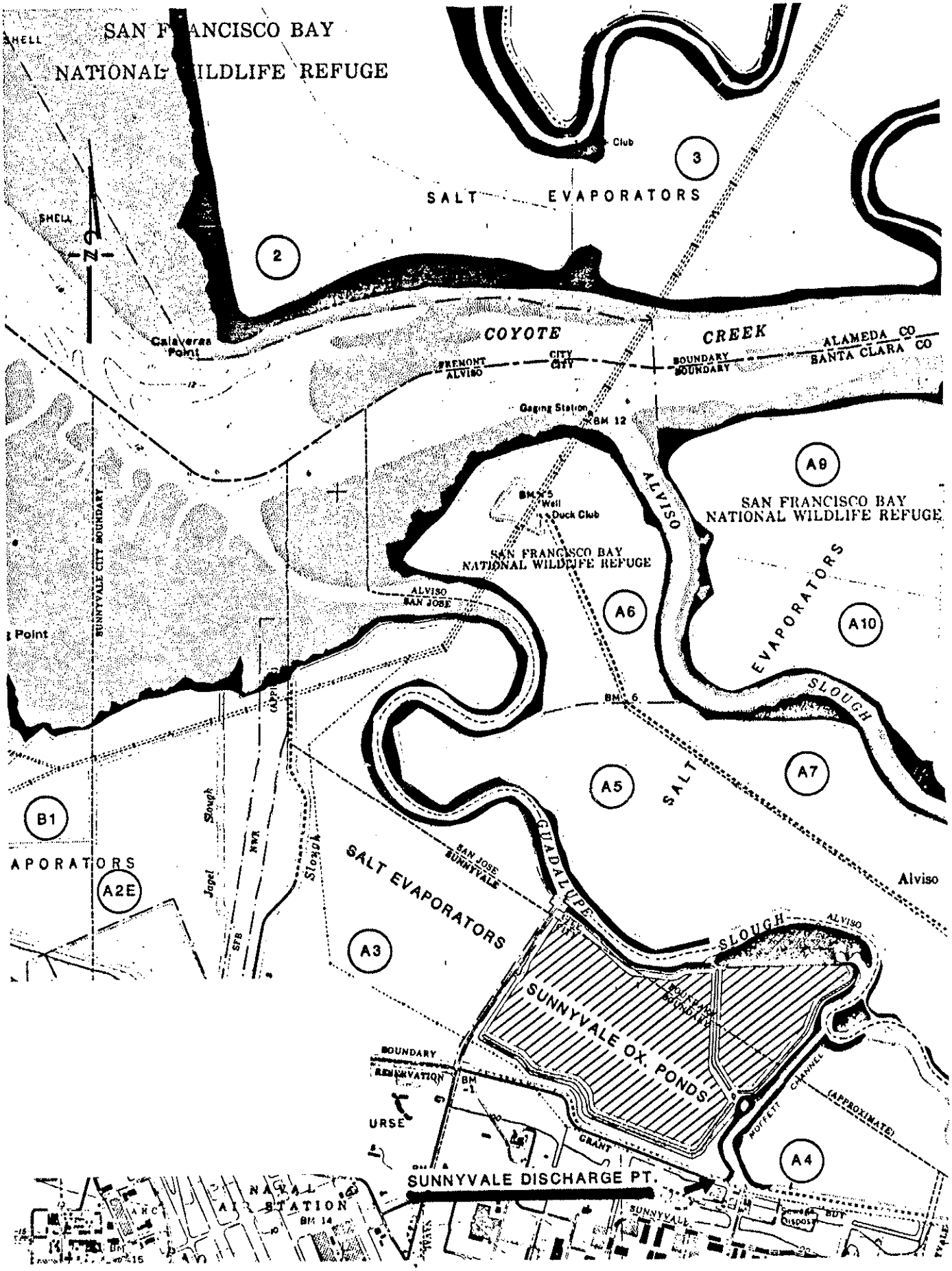
Attachments:

Location Map
Standard Provisions, Reporting
Requirements and Definitions dated Dec. 17, 1986
Self-Monitoring Program
Attachment 1 - Hydrogeologic Assessment Report Standards

Figure 2-1. Location Map



Sunnyvale WPCP Discharge Point



Attachment 1: HYDROGEOLOGIC REPORT

The discharger shall prepare a hydrogeologic report for its sludge storage ponds. A qualified person shall be responsible for the preparation of the report and shall certify its completeness and accuracy. A "qualified person" means a professional meeting the following qualifications: (i) a Registered Geologist, a Certified Engineering Geologist, or a Registered Civic Engineer, and (ii) at least five years of experience in ground water hydrology. The report shall contain, for each sludge pond, all of the following information:

(a) A description of the surface impoundment, including its physical characteristics, its age, the presence or absence of a liner, a description of the liner, the liner's compatibility with the wastes discharged to the impoundment, and the design specifications of the impoundment.

(b) A description of the volume and concentration of waste constituents placed in the surface impoundment, based on a representative chemical analysis of the specific waste type and accounting for variance in waste constituents over time. The waste description should be based on a sampling and analysis program sufficient to adequately characterize the waste. The following factors should be considered: waste discharge history, sampling depths, number of sampling locations per pond, presence of EPA priority pollutants, and quality assurance/quality control procedures.

(c) A map showing the distances, within the facility, to the nearest surface water bodies and springs, and the distances, within one mile from the facility's perimeter, to the nearest surface water bodies and springs.

(d) Tabular data for each surface water body and spring shown on the map specified in subdivision (c) which indicate its flow and a representative water analysis. The report shall include an evaluation and characterization of seasonal changes and, if substantive changes result from season to season, the tabular data shall reflect these seasonal changes.

(e) A map showing the location of all wells within the facility and the locations of all wells within one mile of the facility's perimeter. The report shall include, for each well, a description of the present use of the well, a representative water analysis from the well and, when possible, the water well driller's report or well log.

(f) An analysis of the vertical and lateral extent of the perched water and water-bearing strata which could be affected by leachate from the surface impoundment, and the confining beds under and adjacent to the surface impoundment. This analysis shall include all the following:

1. Maps showing contours of equal elevation of the water surface for perched water, unconfined water, and confined groundwater required to be analyzed by this subdivision.

2. An estimate of the groundwater flow, direction of the perched water, and all water-bearing strata on both maps and the subsurface geologic cross sections.

3. An estimate of the transmissivity, permeability, and storage coefficient for each perched zone of water and water-bearing strata identified on the maps specified in paragraph 1.

4. A determination of the rate of groundwater flow.

5. A determination of the water quality of each zone of the water-bearing strata and perched water which is identified on the maps specified in paragraph 1 and which is under, or adjacent to, the facility. This determination shall be conducted by taking samples either from upgradient of the surface impoundment or from another location which has not been affected by leakage from the surface impoundment.

(g) An indication as to whether the groundwater is contiguous with regional bodies of groundwater and the depth measured to the groundwater, including the depth measured to perched water and water-bearing strata identified on the maps specified in paragraph 1.

(h) The following climatological information:

1. A map showing the contours for the mean annual long-term precipitation for the surrounding region within 10 miles of the surface impoundment.

2. Calculations estimating the maximum 24-hour precipitation and maximum and minimum annual precipitation at the facility based upon direct measurement at the facility or upon measured values of precipitation from a nearby climatologically similar station.

3. The projected volume and pattern of runoff for any streams which, in a 100-year interval, could effect the facility, including peak stream discharges associated with storm conditions.

(i) A description of the composition of the zone beneath the surface impoundment. This description shall include a chemical and hydrogeological characterization of both the consolidated and unconsolidated rock material underlying the surface impoundment, and an analysis for pollutants, including those constituents discharged into the surface impoundment. This description shall also include soil moisture readings from a representative number of points around the surface impoundment's perimeter and at the maximum depth of the surface impoundment. The report shall arrange all monitoring data in a tabular form so that the data, the constituents, and the concentrations are readily discernible.

(j) A measurement of the chemical characteristics of the soil made by collecting a soil sample upgradient from the impoundment or from an area which has not been affected by seepage from the surface impoundment and which is in a hydrogeologic environment similar to the surface impoundment. The measurement shall be analyzed for the same pollutants analyzed pursuant to subdivision (i).

(k) Documentation demonstrating that the monitoring system and methods used at the facility can detect any seepage before waste constituents enter the waters of the state. This documentation shall include, but is not limited to, substantiation of each of the following:

1. The monitoring wells are located close enough to the surface impoundment to identify lateral and vertical migration of any constituents discharged to the impoundment.

2. The monitoring wells are not located within the influence of any adjacent pumping wells which might impair their effectiveness.

3. The monitoring wells are only screened in the aquifer to be monitored.

4. The chosen casing material does not interfere with, or react to, the potential contaminants of major concern at the facility.

5. The casing diameter allows an adequate amount of water to be removed during sampling and allows full development of the monitor well.

6. The annular seal prevents pollutants from migrating down the monitor well.

7. The methods of water sample collection require that the sample is collected after at least five well volumes have been removed from the well and that the samples are transported and handled in accordance with the United States Geological Survey's " National Handbook of Recommended Methods for Water-Data Acquisition", which provides guidelines for collection and analysis of groundwater samples for selected unstable constituents.

8. The waste constituents selected for analysis are specific to the facility, taking into account the chemical composition of wastes previously placed in the surface impoundment. The monitoring data shall be arranged in tabular form so that the date, the constituents, and the concentrations are readily discernible.

9. The frequency of monitoring is sufficient to give timely warning of leachate migration, so that remedial action can be taken prior to any adverse changes in the quality of the groundwater.

10. A written statement from the qualified person preparing the report indicating whether any constituents have migrated into the vadose zone, surface water bodies, perched water, or water-bearing strata.

11. A written statement from the qualified person preparing the report indicating whether any migration of leachate into the vadose zone, surface water bodies, perched water, or water-bearing strata is likely or not likely to occur within five years, and any evidence supporting that statement.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

CITY OF SUNNYVALE
SUNNYVALE WATER POLLUTION CONTROL PLANT
SANTA CLARA COUNTY

NPDES NO. CA0037621

ORDER NO. 88-176

CONSISTING OF
PART A (Dated December 1986) and PART B

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. INFLUENT AND INTAKE

Station	Description
A-001	At any point in the treatment facilities headworks at which all waste tributary to the system is present.

B. EFFLUENT

Station	Description
E-001	At any point in the outfall from the treatment facilities between the point of discharge and the point at which all waste tributary to that outfall is present. (May be the same as E-001-D)
E-001-D	At any point in the disinfection facilities for Waste E-001 at which point adequate contact with the disinfectant is assured.

C. RECEIVING WATERS

Station	Description
C-1-1	At any point in the dredged channel located within 100 feet downcurrent from the old point of the discharge E-1.
C-1-2	At a point in Guadalupe Slough located within 2500 feet easterly from the point of discharge from outfall E-3.
C-1-3	At a point in Guadalupe Slough located within 100 feet westerly from the point of discharge from outfall E-3.
C-2-0	At a point in Guadalupe Slough located not closer than 2000 feet easterly from Station C-3-0.
C-3-0	At a point in Guadalupe Slough located at the confluence with the dredged channel.
C-4-0	At a point in Guadalupe River located in the vicinity of the Moffett NAS fuel dock and not closer than 500 feet from the point of discharge fron outfall E-3.
C-4-2	At a point in Guadalupe Slough located 2000 feet bayward from Station C-4-0.

C-4-4	At a point in Guadalupe Slough located 4000 feet bayward from Station C-4-0.
C-4-6	At a point in Guadalupe Slough located 6000 feet bayward from Station C-4-0.
C-5-0	At a point in Guadalupe Slough located at the PG&E Company power line crossing near the mouth of Guadalupe River.

D. LAND OBSERVATIONS

Station	Description
P-1 thru P-'n'	Located at the corners and midpoints of the perimeter fenceline surrounding the treatment facilities. (A sketch of the locations of these stations will accompany each report)
L-1 thru L-'n'	Located along the perimeter levee at equidistant intervals not to exceed 500 feet. (A sketch of the locations of these stations will accompany each report)
G-1 thru G-'n'	Future groundwater monitoring wells to be specified by the Executive Officer to monitor the land disposal site for sludge drying.

E. OVERFLOWS AND BYPASSES

Station	Description
OV-1 thru OV-'n'	Bypasses or overflows from manholes, pump stations, or collection systems.

F. SLUDGE

The discharger shall continue to analyze sludge pursuant to the pretreatment requirements of Order 84-60, as amended.

II. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be that given in Table 1.

III. MODIFICATION OF PART A, DATED DECEMBER 1986

None

I, Steven R. Ritchie, Executive Officer, hereby certify that the following Self-Monitoring Program:

1. Has been developed in accordance with the procedures set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order 88-176.

2. Has been amended and ordered by the Board on December 21, 1988.

3. May be revised by the Executive Officer pursuant to federal regulations (40 CFR 122.36); other revisions may be ordered by the Board.

Attachment: Part A (December 1986)
Receiving Water Sampling Location Map

STEVEN R. RITCHIE
Executive Officer

TABLE 1
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS (3,6)
City of Sunnyvale

SAMPLING STATION	A-001	E-001D			L	C (5)	P	OV
TYPE OF SAMPLE	C-24	G (2)	CONT	C-24	G	G	O	O
Flow Rate, continuous (mgd)	D		D					
CBOD, 5-day 20°C (1) (mg/L & kg/day)	3/W			3/W				
Chlorine Residual & (4) Dosage (mg/L & kg/day)			(cont.)					
Settleable Matter (mL/L-hr & cu ft/day)		5/W						
Total Suspended Solids (1) (mg/L & kg/day)	3/W			3/W				
Oil & Grease (mg/L & kg/day)	M	W						
Total Coliform (MPN/100mL)		3/W				2M		
Toxicity-96hr, Flow-thru (%survival in undiluted effl)			W					
Ammonia Nitrogen (mg/L & kg/day)				W		2/M		
Nitrate Nitrogen (mg/L & kg/day)				W		2/M		
Nitrite Nitrogen (mg/L & kg/day)				W		2/M		
Total Organic Nitrogen (mg/L & kg/day)				W		2/M		
Total Phosphate (mg/L & kg/day)				2/M		2/M		
Turbidity, Nephelometric (NTU)				W		2M		
pH (units)		D				2/M		

TABLE 1 (continued)
City of Sunnyvale

SAMPLING STATION	A-001	E-001D			L	C	P	OV
TYPE OF SAMPLE	C-24	G	CONT	C-24	G	G	G	O
Dissolved Oxygen (mg/L & %saturation)		D				2/M		
Temperature (°C)		D				2/M		
Apparent Color (color units)				W		2/M		
Secchi Depth (inches)						2/M		
Sulfides (if DO < 5.0mg/L) Total & Dissolved (mg/L)		D				2/M		
Arsenic (mg/L & kg/day)				W				
Cadmium (mg/L & kg/day)				W				
Chromium (mg/L & kg/day)				W				
Copper (mg/L & kg/day)				W				
Cyanide (mg/L & kg/day)				W				
Silver (mg/L & kg/day)				W				
Lead (mg/L & kg/day)				W				
Mercury (mg/L & kg/day)				W				
Nickel (mg/L & kg/day)				W				
Zinc (mg/L & kg/day)				W				

TABLE 1 (continued)
City of Sunnyvale

SAMPLING STATION	A-001	E-001D			L	C	P	OV
TYPE OF SAMPLE	C-24	G	CONT	C-24	G	G	G	O
Phenolic Compounds (mg/L & kg/day)				M				
Selenium (mg/L & kg/day)				W				
All Applicable Standard Observations		D			W	2/M	W	E
PAHs-EPA Method 610 (mg/L & kg/day)				Q				
Non-dissociated Ammonia as N (mg/L & kg/day)						2/M		
Organic and Metallic Priority Pollutants (mg/L & kg/day)	Y			Q				

LEGEND

TYPES OF SAMPLES

G = grab sample
C-24 = composite sample (24 hour)
Cont = continuous sampling
O = observation

TYPES OF STATIONS

A = treatment facility influent station
E = waste effluent stations
C = receiving water stations
P = treatment facilities perimeter stations
L = basin and/or pond levee stations

FREQUENCY OF SAMPLING

E = each occurence
H = once each hour
D = once each day
W = once each week
M = once each month
Y = once each year

2/H = twice per hour
2/W = 2 days per week
5/W = 5 days per week
2/M = 2 days per month
2/Y = once in March & Sept.
Q = quarterly, once each in Mar, June, Sept, & Dec.

2H = every 2 hours
2D = every 2 days
2W = every 2 weeks
3M = every 3 months
Cont = continuous

NOTES FOR TABLE 1.:

1. Percent removal (effluent v. influent) shall also be reported

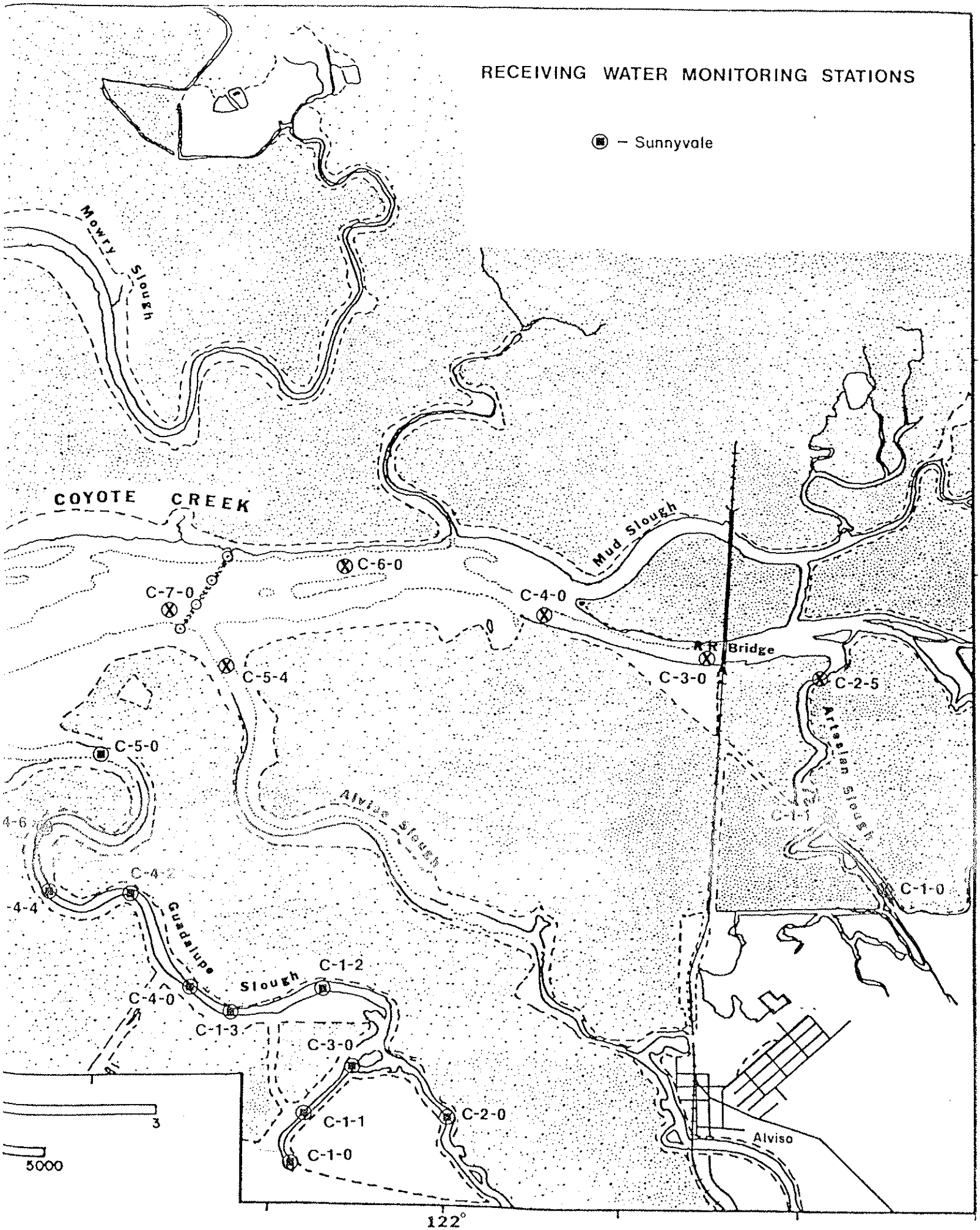
2. Grab samples shall be taken on day(s) of composite sampling

3. If any effluent sample is in violation of limits, sampling shall be increased for that parameter to at least daily or greater until compliance is demonstrated in two successive samples. Receiving water violations shall be reported in the monthly report; increased receiving water monitoring may be required.

4. Chlorine residual analyzers shall be calibrated against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, grab samples shall be taken every 30 minutes until compliance is achieved.

5. Receiving water monitoring to be done by low water slack tide sampling

6. All flow other than to the outfall (e.g. sludge) shall be reported monthly. Daily records shall be kept of the quantity and solids content of dewatered sludge disposed of and the location of disposal.


RECEIVING WATER MONITORING STATIONS
⊛ – Sunnyvale
Mowry Slough
COYOTE CREEK
Mud Slough
C-6-0
C-7-0
C-4-0
RR Bridge
C-3-0
C-2-5
C-5-4
C-5-0
Artesian Slough
Alviso Slough
C-4-6
C-4-2
C-4-4
Guadalupe Slough
C-1-2
C-4-0
C-1-3
C-3-0
C-1-1
C-2-0
C-1-0
Alviso
3
5000
122°